Healthy lifestyle of people with intellectual disabilities

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DOI:
10.33612/diss.132702260

Chapter 3

Examining determinants of lifestyle interventions targeting persons with intellectual disabilities supported by healthcare organizations: Usability of the Measurement Instrument for Determinants of Innovations

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Journal of Applied Research in Intellectual Disabilities.2019 Jul;32(4):913-931.

ABSTRACT

Background: Due to complex processes of implementation of innovations aimed at persons with intellectual disabilities (ID) in health care organizations, lifestyle interventions are not used as intended or not used at all. In order to provide insight into determinants influencing this implementation, this study aims to ascertain if the Measurement Instrument for Determinants of Innovations (MIDI) is useful for objectively evaluating implementation.

Method: With semi-structured interviews data concerning determinants of implementation of lifestyle interventions were aggregated. These data were compared to the determinants questioned in the MIDI. Adaptations to the MIDI were made in consultation with the author of the MIDI.

Results: All determinants of the MIDI, except for that concerning legislation and regulations, were represented in the interview data. Determinants not represented in the MIDI were the level of ID, suitability of materials and physical environment, multi levelness of interventions and several persons that could be involved in the intervention, such as Direct Support Persons (DSPs), a therapist, or family, and the communication between these involved persons.

Conclusion: We suggested making adjustments to existing questions of the MIDI in order to improve usability for deployment in organizations that provide care to persons with ID. The adjustments need to be tested with other interventions.

INTRODUCTION

Implementation of innovations aimed at persons with intellectual disabilities (ID) can be complex in health care organizations and lifestyle settings outside the organization, such as a community or sports center, the local supermarket or settings related to the social environment of the person with ID, which are supporting these individuals (Grol et al., 2005; Fleuren et al., 2014; Fleuren et al., 2004). Due to this complex process, the implementation of innovation often fails; interventions are not used as intended or not used at all. As a consequence, the target population will not benefit from them (Fleuren et al., 2004; Bartholomew et al., 2011). In particular, interventions aiming at improving the lifestyle require awareness of the complex process of implementation and influencing determinants (Glasgow et al., 1999). Various determinants play a role in the process of implementation, either as barriers or as facilitators (Bartholomew et al., 2011; Glasgow et al., 1999; Sallis et al., 2006). Analyses of these determinants are considered to be an important prerequisite for implementation (Fleuren et al., 2014; Bartholomew et al., 2011; Glasgow et al., 1999). Most implementation theories emphasize the importance of such an analysis in order to optimize the implementation process by using strategies that are adapted to the most important determinants (Grol et al., 2005; Fleuren et al., 2014; Bartholomew et al., 2011; Rogers, 2003; Prochaska & Velicer, 1997; Green & Kreuter, 1991).

Health care organizations play a major role in promoting the healthy lifestyle of those individuals with ID who receive daily care by these organizations (Steenbergen et al., 2017). In practice, the organizations offer a multitude of partly self-developed interventions such as stimulating physical activity and weight control programmes in order to improve the lifestyles of those that they support (Steenbergen et al., 2017). Despite these lifestyle approaches, organizations still recognize that it is difficult to consistently integrate a healthy lifestyle into the daily support for persons with ID (Bartlo & Klein, 2011; Naaldenberg et al., 2013; Kuijken et al., 2016). Besides, it is known that persons with ID have very minimal physical activity levels (Hilgenkamp et al., 2012; Waninge et al., 2013) and their diets tend to be inadequate (Heller & Sorensen, 2013). As a consequence, they have associated negative health outcomes such as being overweight or obese and exhibiting decreased physical fitness levels (Winter et al., 2012; Hilgenkamp et al., 2012).

Implementation of lifestyle approaches appears to be more successful when the intervention components are focused on multiple determinants that affect lifestyle behaviour (Bartholomew et al., 2011; Glasgow et al., 1999; Sallis et al., 2006; Naaldenberg et al., 2013; Temple, 2007). In these ecological approaches (Sallis et al., 2006), the range of determinants can be divided into personal and environmental determinants and the interconnectedness between them (Emerson et al., 2011). This even more applies to persons with ID; a large amount of determinants within a health care organization as well as outside the organization could affect their lifestyles (Naaldenberg et al., 2013; Temple, 2007; Messent et al., 1999; Brooker et al., 2015; Kuijken & van Anrooy et al., 2018).

Influencing determinants are, for example, the processes of deinstitutionalization of health care organizations and the subsequent challenges regarding autonomy and participation. In addition, healthy behaviour and sustainable improvement of the lifestyles of persons with ID depend, to a large extent, on the social and physical environment to encourage healthy behaviour (Brooker et al., 2015; Buntinx et al., 2010; Houwen et al., 2014; Kuijken & van Anrooy et al., 2018). Also, this population depends on those who support them during their daily living activities, i.e. their caregivers or Direct Support Persons (DSPs) (Nakken & Vlaskamp, 2007). Besides the influence of DSPs, relatively little is known about the other determinants which could affect the sustainable improvement of a healthy lifestyle in health care organizations and lifestyle settings supporting persons with ID (Steenbergen et al., 2017). With more insight into these determinants, health care organizations can improve their approaches.

In a previous descriptive multiple case study, the lifestyle approaches of healthcare organizations for persons with ID had been analyzed as a first exploration for further implementation research (Steenbergen et al., 2017). Lifestyle approaches including lifestyle policies and accompanying interventions were determined with a checklist based on the Ecological Model of Four Domains of Active Living (Sallis et al., 2006), Intervention Mapping (Bartholomew et al., 2011), and the RE-AIM-model (Glasgow et al., 1999) (Steenbergen et al., 2017). A logical next step is gaining deeper insight into the lifestyle interventions which are developed and used in practice.

The Measurement Instrument for Determinants of Innovations (MIDI) is an instrument that maps the determinants that actually affect the use of an innovation in practice (Fleuren et al., 2014; Fleuren et al., 2018). The MIDI was developed from 50 potentially relevant determinants of innovation and is based on a systematic review, a Delphi panel (Fleuren et al., 2004), and empirical studies (Fleuren et al., 2014). The MIDI offers a comprehensive framework and quantifies the presence or absence of a determinant. The MIDI could offer an objective view of the determinants which could affect the implementation of a healthy lifestyle within healthcare organizations that are supporting persons with ID. The MIDI has been tested in the Youth Health Care and Education sectors, however, the generalizability to other settings has not been tested (Fleuren et al., 2014). Therefore, the authors of the MIDI invited implementation researchers to use and explore the MIDI in other settings where it is expected that similar processes will occur when professionals innovate in their daily contact with clients (Fleuren et al., 2014). Until now, the MIDI has not been evaluated for usability in health care organizations that support persons with ID.

This study aims to determine if the MIDI is also useful for objectively evaluating implementation of lifestyle interventions by health care organizations providing care to persons with ID and if it is necessary to adapt the MIDI for these settings in order to answer the following research questions:

1. Are theoretically based determinants of the MIDI represented in data of semi-structured interviews about four lifestyle interventions that are developed and offered by four health care organizations supporting persons with ID?
2. Are data found in the semi-structured interviews that could not be purely related to determinants currently included in the MIDI?

MATERIALS AND METHODS

Design

A qualitative study was performed to answer the two research questions. With semi-structured interviews, data concerning determinants of implementation of lifestyle interventions offered by four health care organizations supporting persons with ID were aggregated. These data were analyzed deductively because they were compared to the determinants questioned in the MIDI.

Research units

Semi-structured interviews were performed with four professionals that were responsible for the lifestyle interventions. These interventions are offered by four health care organizations in the northern part of the Netherlands that are supporting persons with ID within various domains such as long-term care, social support, support of adults, elderly, children, youth with ID, and their families. Prior to this study, an inventory was compiled of existing lifestyle interventions in practice within nine healthcare organizations providing care and support to persons with ID (Steenbergen et al., 2017). The analysis from this inventory was discussed in knowledge networks for managers and content experts from the nine healthcare organizations. We recruited the organizations which participated in this study by asking the managers and content experts which of the interventions that were found could be analyzed in depth within their organizations. The interviews were conducted in 2015.

Sample size was determined by saturation (Creswell, 1998) for all determinants of the MIDI in the interviews as well as saturation of additional determinants found in the interviews. After the comparison of interview 1 and interview 2, no new additions to the MIDI or interviews were determined when comparing interview 3 and interview 4. These findings resulted in a sample size of four interviews.

The interventions and characteristics of the intervention components that were examined are shown in Table 1. A more detailed description of the interventions can be found in Table 2. Data from the semi-structured interviews were used for analysis.

Table 1. Description of the lifestyle interventions in terms of aim, responsible professionals and target population

Intervention	Aim of the intervention	Target population	Responsible professionals
1. Lifestyle Map and Healthy Diet			
A. Lifestyle Map	- Mapping health issues per person - Goal setting - Client involvement - Healthy weight and physical activity	- Persons with ID	- Multidisciplinary team
B. Healthy Diet	- Awareness of preferences, habits, and problems of person with ID - Awareness of staff - Stimulating healthy diet	- Persons with ID - Direct Support Persons - Persons with ID	- Direct support persons - Social network - Students
2. Feeling Good and Healthy living	- Weight loss - Obtaining healthy lifestyle	- Young adults with ID and overweight - Persons with ID	- Dietitian - Direct support persons
3. A. Weight control program	- Weight loss	- Adults with ID and overweight	- Multidisciplinary team - Direct support persons
4. B. Weight control program	- Weight loss	- Adults with ID and overweight	- Multidisciplinary team

Table 2. A more detailed description of the interventions (Semi-structured interviews)

Intervention name	**Description of the intervention**
Intervention 1A: 'Lifestyle Map'	'Lifestyle Map' is an intervention for all of the persons with ID and their DSPs. The aim of the intervention is to develop an overview of the health status of the persons with ID. This Lifestyle Map provides DSPs with an overview of the nutritional status of this population, how much they move, which medication is used, and if there are any health issues. A movement scientist and occupational therapist developed the Lifestyle Map; a dietician was also involved.
Intervention 1B: 'Healthy Diet'	The Healthy Diet project provides lessons to both DSPs and persons with mild ID about a healthy diet. The aim is to provide awareness of preferences, habits, and problems of persons with ID with regard to a healthy diet and offers tips and tricks for stimulating healthy nutrition.

	In the lessons for DSPs, attention was also paid to the nutritional problems of persons with ID and how to address the issues. Those involved in the intervention program include DSPs, the social network of the person with ID, and students.
Intervention 2: 'Feeling Good and Healthy Living'	'Feeling Good' was a continuation of 'Healthy Living'. Both interventions were weight control programs, and both projects had also the aim to develop a healthy lifestyle. The target group of the interventions was young adults with moderate to mild ID who were overweight. The project consisted of workshops with the themes of nutrition and exercise. A cook was involved in order to instruct the persons with ID how to cook in a healthy way. After each lesson, the persons with ID received a summary of what had been discussed so that their DSPs were also informed. The duration of the project was one year. A dietician and DSPs were also involved in the intervention program.
Intervention 3: 'A weight control program'	The program has been developed within health care organization A and aims to support persons with ID in controlling their weight (losing weight or no further weight gain). The target group of the intervention program was persons with mild to moderate ID who were overweight and without medical contraindications. During the intervention program, extra attention was paid to healthy lifestyles in daily life. In addition, these clients participated in activities such as a nutrition course and exercise classes tailored to their level of functioning. Before the weight control program began, there were consultation meetings between the management of the involved locations to facilitate being able to offer a customized program. This intervention consisted of several activities such as workshops for employees, persons with ID, and their social environment; repeated measurements; a healthy nutrition course; fitness classes; and a graduation ceremony. Participation in the program is at least half a year. Those involved in the intervention program included the program coordinator, physiotherapist, dietician, employee education, DSPs, and the management of involved locations (Steenbergen, 2010).
Intervention 4: 'A weight control program'	The program was developed within health care organization B. The aim of this intervention was to support persons with ID in controlling their weight (losing weight or no further weight gain). The target group of the intervention program was persons with mild to moderate ID who were overweight and without medical contraindications. During the development phase of the intervention, policy was written and management was involved. The clear vision and associated policy as well as a good cooperative management team provided clarity in agreements and transcending goals during the implementation of the intervention. The social environment was also involved before and during it. This intervention consisted of several activities such as individual meetings to obtain measurements; weekly education for 16 weeks; and intensive exercise. Participation in the program was at least half a year. Those involved in the intervention program included a project leader, physiotherapist, dietician, employee education, DSPs, and the management of involved locations.

Data collection

Semi-structured interviews

A semi-structured individual interview was performed with the professionals responsible for the intervention. The first 15 minutes of the interview were used to obtain an insight into the lifestyle interventions by asking about their characteristics: the name, aim, and target population of the interventions and who was responsible for the performance of the intervention.

Subsequently, determinants of the Ecological Model of Four Domains of Active Living (Sallis et al., 2006), Intervention Mapping (Bartholomew et al., 2011), the Behaviour change model (Kruk et al., 2013) and the RE-AIM-model (Glasgow et al., 1999) were requested using a topic list of questions (Appendix 1). The categories in the topic list included the characteristics of the organization and interviewees; characteristics of the intervention, i.e., content, aim, resources, and target population; barriers and facilitators; and development and evaluation of effects of the intervention. Open-ended questions were also included. The interviews lasted between one and two hours and were recorded. They were conducted at the healthcare organizations with the advantage that materials belonging to the interventions could be shown easily.

Five students were trained to conduct the interviews by practicing with the topic list while feedback was provided on the performance and the data collected. They conducted the interviews in groups of two or three students per interview. The interviewers were students from the departments of Nutrition and Dietetics, Healthy Lifestyle Sports, and Applied Psychology of a university of applied science.

MIDI

The MIDI consists of 29 determinants that are divided into four categories directed at the innovation, the user, the organization, and the socio-political context (Fleuren et al., 2014).

The MIDI was used to guide the coding of the interview data.

The MIDI predecessor contained 50 determinants and was reduced to 29 determinants based on empirical data and consultation with 22 implementation experts (Fleuren et al., 2004; Fleuren et al., 2014). However, the MIDI developers explicitly invited researchers to use the MIDI in applied settings and explore if determinants in the original list should be retained in a specific setting. Therefore, we used the original list as a point of reference (Fleuren et al., 2004).

Data procedure

Data were analyzed deductively. Data collected through the interviews regarding determinants were compared to MIDI determinants. The answers concerning determinants that were retrieved by means of the interview protocol were compared to the determinants questioned in the MIDI.

Interview data were manually coded. We used a content analysis approach with MIDI factors as predetermined codes without any specific software. Two independent reviewers (BdJ and AW) analyzed the data whereby divergence was solved with discussion until 100% consensus was reached. A narrative approach was used to describe the findings. Determinants that could not be coded but were included in the interview data and determinants that were in the MIDI and not included in the interview data were described. Adaptations and improvements were suggested, if necessary, based on the comparison, review, and discussion with the author of the MIDI. These adaptations were obtained by searching in the original list of 50 determinants underlying the MIDI (Fleuren et al., 2004). Subsequently, adaptations to the MIDI were made in consultation with its author (MF).

Ethics approval and consent to participate

The need for ethics approval was deemed unnecessary according to national regulations (Medical Ethics Committee, University Medical Center Groningen, the Netherlands, METcUMCG). Informed consent was provided at the beginning of the interviews. Data was collected from volunteer respondents who were employed by the health care organizations participating in the study.

RESULTS

In the interview data, all determinants of the MIDI except for one, were represented. In addition, we found data in the interviews that could not be purely related to determinants currently included in the MIDI.

MIDI determinants found in interviews

Table 3 depicts the determinants of the MIDI that were present in the interviews. In all of the interviews combined, all of the determinants of the MIDI were represented except for determinant 29, 'Legislation and regulations'. Determinants 4, 'Complexity' and 8, 'Personal benefits/drawbacks' were both specified in one interview; Determinants 9, 'Outcome expectations'; 10, 'Job perception'; 16, 'Self-efficacy'; 20, 'Replacement when staff leave' and 26, 'Unrest in organization' were all referred to in two interviews. The other determinants were indicated in three (ten determinants) or all of the interviews (11 determinants).

Table 3. Presence of a MIDI determinant (Fleuren et al., 2014) in the interviews (2nd to 5th column), clarification of determinants and proposed adaptations to the MIDI as a result of discussion (last column)

Intervention / Determinants MIDI	1	2	3	4	Proposed adaptation as a result of discussion
Associated with the intervention					
1 Procedural clarity	Yes	Yes	Yes		To add: a question at which level of intellectual disability the intervention is aiming at.
2 Correctness	Yes	Yes	Yes	Yes	
3 Completeness	Yes	Yes	Yes	Yes	
4 Complexity			Yes		
5 Compatibility		Yes	Yes	Yes	
6 Observability	Yes	Yes	Yes	Yes	Clarification: 'visibility of the outcomes for the user' To add: 'are the effects of intervention evaluated?'
7 Relevance for client/patient		Yes	Yes	Yes	To add: sub question about the relevance for specific levels of intellectual disability.
Associated with the user, i.e. professional					Clarification determinants 8-18: the professional is the user.
8 Personal benefits/drawbacks	Yes				
9 Outcome expectations	Yes		Yes		
10 Job perception	Yes	Yes			
11 Client/patient satisfaction	Yes		Yes	Yes	
12 Client cooperation	Yes	Yes	Yes	Yes	
13 Social support	Yes	Yes	Yes	Yes	To add: 'Is social support available: 1) for direct support persons for example of other professionals; 2) for persons with ID? 3) from family members?
14 Descriptive norm	Yes	Yes	Yes		Clarification: 'working with the intervention as intended'
15 Subjective norm	Yes		Yes	Yes	
16 Self-efficacy			Yes	Yes	Clarification: To be asked for all parts of the intervention and to all professionals involved with the intervention.
17 Knowledge	Yes	Yes	Yes		
18 Awareness of content of innovation		Yes	Yes	Yes	
Associated with the organization					

19 Formal ratification by management	Yes	Yes	Yes	Yes	
20 Replacement when staff leave	Yes	Yes			
21 Staff Capacity	Yes	Yes	Yes		
22 Financial resources	Yes	Yes	Yes	Yes	
23 Time available	Yes	Yes	Yes	Yes	
24 Material resources and facilities	Yes	Yes	Yes	Yes	To add: 'Are the materials and resources relevant and suitable for specific levels of ID?'
25 Coordinator	Yes	Yes		Yes	
26 Unrest in organization	Yes	Yes			
27 Information accessible about use of innovation	Yes	Yes	Yes	Yes	
28 Feedback to user about innovation process	Yes	Yes	Yes	Yes	
29 Relationship with other departments or organizations	Yes	Yes	Yes	Yes	To add: Determinant 12 (Fleuren et al., 2004; 2014)
30 Logistical procedures related to the innovation		Yes	Yes	Yes	To add: Determinant 17 (Fleuren et al., 2004; 2014)
Number of potential users to be reached	Yes	Yes	Yes	Yes	To add: Determinant 18 (Fleuren et al., 2004; 2014) To add: Questions about communication.
Associated with the sociopolitical context					
32 Legislation and regulations					

Determinants not currently included in MIDI

Table 3 also depicts the data in the interviews that could not be purely related to determinants currently included in the MIDI. These determinants were divided into three categories.

First, the influence of the level of ID is an important determinant. As such, its influence on functioning and performing an intervention was introduced during the interviews as well as the suitability of logistics (accessing the intervention activities) and the suitability of materials and physical environment of an intervention with respect to the level of ID. For example, interviewees described difficulties in familiarizing persons with ID with the fitness equipment (textbox 1).

Textbox 1.

'This intervention was aimed at persons with profound ID and multiple disabilities who are able to eat independently. However, persons with similar disabilities often also experience dysphagia and as a consequence, the intervention is not suitable for these persons.'(Intervention 1B)

'It was difficult to familiarize the target group with fitness equipment.' (Intervention 4)

'A sports center that can offer these sports activities to people with ID should be close by.' (Intervention 4)

'We have made a promo-video about the programme showing what the programme entails. We gave workshops in which we also showed the video. Both were to motivate the clients and to make sure that clients were able to choose whether or not they wanted to participate. Because of these extra resources, participants became really enthusiastic.' (Intervention 3)

'Getting participants to the right location is very difficult.' (Intervention 4)

Second, the point of evaluation of effects for specific outcome measures as a part of the intervention was mentioned. For example, the weight control programme (intervention 3) had an inventory / evaluation component measuring the movement pattern, the diet, BMI, and waist circumference (textbox 2).

Textbox 2.

'What is very valuable about this intervention is that the measurements are specific and fit exactly with the different components of the intervention.' (Intervention 3)

Third, a recurring topic was the frequent occurrence of multidisciplinary work and the multi levelness of interventions. Related to multidisciplinary work, interviewees indicated that there are several persons involved in an intervention such as care professionals from within or outside the

organization, or the social environment. Three interviewees described that the number of professionals involved in the interventions and communication between them was problematic. The complexity of this was described by the interviewee of intervention 3. Here, a physical therapist initially instructed both a DSP and their clients in physical activity components, whereas simultaneously the same DSP initiated a nutrition course, which was handled by a trainer from another department, who is in turn guided by a dietician. Eventually the DSP takes over both components of the programme, all the while referring back with the physical therapist, trainer and dietician. Additionally, the DSP will coordinate with other DSPs, the behavioural therapist and department physician and not to forget, the social environment of the person with ID.

Interventions also had multiple target groups besides people with ID such as their DSPs or social environment such as relatives. Support for persons with ID themselves and their social environment as well as for their DSPs was considered important. The support for DSPs which was described could come from professionals from within the team or from other wards within the same organization or outside. In addition, they indicated that barriers were present with respect to the relationship with other departments from within the organization as well as in lifestyle settings outside the organization. Interviewees also discussed that it would be helpful if all of the professionals involved were aware of the aim of the intervention and of its importance. Finally, the interviewees frequently stated that not all of the persons involved in performing the intervention with the person with ID actually worked with the intervention as intended (textbox 3).

Textbox 3.

'This was a pleasant intervention because a lot of disciplines were involved. However, whether or not communication was going well seemed to be dependent on personal factors.' (Intervention 3)

'The nutrition course also includes a workshop for DSPs; an instruction for DSPs by a professional trainer and a dietician; and in addition, there is a manual and a step-by-step lesson plan. Based on this, DSPs can supervise the lessons for their clients. This supervising by DSPs is a factor for success because DSPs know their clients well and can therefore be very sensitive to necessary on-the-spot adaptations to the lessons.' (Intervention 3)

'During the first implementation of the intervention programme, too little time was invested in social support and as a result of which people started to quit. The second time we implemented the programme, there was a good investment in social support, this resulted in the effectiveness of the programme.' (Intervention 4)

'What we noticed was that, when a DSP without expertise in the field of exercise supervises the fitness training, participants usually trained at a significantly lower heart rate level than

when a physical therapist or movement scientist supervises the training despite the two to three months train the trainer training for DSPs and step-by-step instruction sheets.' (Intervention 3)

'The one DSP motivates clients more than the other. This sometimes produces different results during test moments'. (Intervention 4)

'DSPs often find it difficult to deviate from the manual and step-by-step lesson plan while, sometimes, it would be more advantageous to make a lesson more practical by for example opening up the kitchen cabinets or refrigerator and using real products instead of playing cards.' (Intervention 3)

Suggested adaptations

After a discussion with the author of the MIDI, we suggested eight additional questions that are related to current MIDI determinants. Some interview data did not fit into any of the MIDI determinants, therefore, we adjusted three determinants that came from the original list of 50 underlying the MIDI (Fleuren et al., 2004). In Table 4, the suggested adaptations are described. In Appendix 2, the MIDI (Fleuren et al., 2014) is shown supplemented with the proposed adjustments and additional determinants for improving usability of the MIDI for objectively evaluating the implementation of lifestyle interventions in health care organizations that provide care to persons with ID ('adjustments ID' or 'additions ID').

Adaptations related to level of ID

In order to address the questions of interviewees about the intervention intended for persons with specific levels of ID, a question about this was added as part of determinant 1, 'Procedural clarity'. Also, the relevance for specific levels of intellectual disability as a sub question of determinant 7, 'Relevance for client', and about the relevance and suitability of the materials and resources for specific levels of ID as a part of determinant 24, 'Material resources and facilities', were added.

In order to overcome the questions regarding the suitability of logistics (accessing the intervention activities), a question about the arrangement of logistical procedures was added under the new determinant 30, 'Logistical procedures', related to innovation, (determinant 17 in the original list (Fleuren et al., 2004; Fleuren et al., 2014)).

Adaptations related to outcome measures

In order to determine if the intervention is evaluating effects for specific outcome measures, a question was added to determinant 6, 'Observability'. This determinant as well as determinant 28, 'Performance feedback', does evaluate visibility of the outcomes for users, feedback to the user

about the innovation process, and the implementation outcome, however, they do not ask if evaluation of effects for specific outcome measures is part of the intervention.

Adaptations related to multidisciplinary work and multi levelness of interventions

To address the issues about multi levelness of interventions and multidisciplinary work, determinant 13, 'Social support', was split into five parts: support for DSP's from their team, their supervisor, their senior management, other disciplines from other wards within the same organization or outside, and family members. In addition, it was decided to propose 'Descriptive norm' as part of determinant 14 in order to inquire about working with the intervention as intended. Related to this point, the author of the MIDI suggested that determinant 16, 'Self-efficacy', could be asked for all parts of the intervention and to all professionals involved with it, i.e., within the entire team supporting a person with ID.

To address the issues about the number of professionals involved and if and how communication between these professionals are organized, new questions were added under the new determinant 31, 'Number of potential users to be reached' (Determinant 18 in the original list (Fleuren et al., 2004; Fleuren et al., 2014)): 'How many professionals are involved in the intervention?'; 'Is communication about the intervention organized?'; 'If yes, how is it organized?'; 'Is communication sufficient?'.

The final point discussed with the author of the MIDI was about involvement of DSPs and other professionals in the development of the intervention. The following question was proposed under the new determinant 29, 'Relationship with other departments or organizations' (Determinant 12 in the original list (Fleuren et al., 2004; Fleuren et al., 2014)): 'There is a good relationship with other departments or organizations involved in the intervention'.

Table 4. Suggested adaptations to the MIDI (Fleuren et al., 2014)

Determinant 1	**Procedural clarity**
Description	Extent to which the innovation is described in clear steps / procedures.
Operationalisation	The innovation clearly describes the activities I should perform and in which order. Response scale: (1) totally disagree, (2) disagree, (3) neither agree nor disagree, (4) agree, (5) totally agree
Adjustment ID	The intervention is intended for persons with specific levels of ID. Response scale: (1) mild ID, (2) moderate ID, (3) severe ID, (4) profound ID, or a combination of these levels: …….

Determinant 6	**Observability**
Description	Visibility of the outcomes for the user, for example, whether the outcomes of a particular treatment are clear to the user.
Operationalisation	The outcomes of using the innovation are clearly observable. Response scale: (1) totally disagree, (2) disagree, (3) neither agree nor disagree, (4) agree, (5) totally agree
Adjustment ID	The intervention evaluates effects for specific outcome measures. Response scale: (1) yes, (2) partly, (3) no.
Determinant 7	**Relevance for client**
Description	Degree to which the user believes the innovation is relevant for his/her client.
Operationalisation	I think the innovation is relevant for my clients. Response scale: (1) totally disagree, (2) disagree, (3) neither agree nor disagree, (4) agree, (5) totally agree
Adjustment ID	I think the innovation is relevant for the specific levels of ID of my clients: Response scale: (1) totally disagree, (2) disagree, (3) neither agree nor disagree, (4) agree, (5) totally agree
Determinant 13	**Social support**
Description	Support experienced or expected by the user from important social referents relating to the use of the innovation (for example from colleagues, other professionals they work with, heads of department or management).
Operationalisation	I can count on adequate assistance from my colleagues if I need it to use the innovation. *This question is asked for important social referent group or person inside or outside the organization (colleagues, immediate hierarchical superior, management, professionals involved in the delivery of care, etc.).*
Addition ID	*Ask always for support of Direct Support Persons and support of family members* Response scale: (1) totally disagree, (2) disagree, (3) neither agree nor disagree, (4) agree, (5) totally agree
Determinant 14	**Descriptive norm**
Description	Colleagues' observed behaviour; degree to which colleagues use the innovation.

Operationalisation	In your opinion, what proportion of the colleagues in your organization for whom the innovation is intended actually use the innovation? Response scale: (1) not a single colleague (2) almost no colleagues (3) a minority (4) half (5) a majority (6) almost all colleagues (7) all colleagues.
Adjustment ID	Are professionals from different disciplines working with the intervention as intended? Response scale: (1) none of the disciplines (2) almost none of the disciplines (3) a minority of the disciplines involved (4) half (5) a majority (6) almost all disciplines (7) all disciplines.
Adjustment ID	Are family members performing the intervention as intended? Response scale: (1) totally disagree, (2) disagree, (3) neither agree nor disagree, (4) agree, (5) totally agree

Determinant 24	**Material resources and facilities**
Description	Presence of materials and other resources or facilities necessary for the use of the innovation as intended (such as equipment, materials or space).
Operationalisation	Our organization provides me with enough materials and other resources or facilities necessary for the use of the innovation as intended. Response scale: (1) totally disagree, (2) disagree, (3) neither agree nor disagree, (4) agree, (5) totally agree
Adjustment ID	The materials and resources are suitable for the intended levels of ID Response scale: (1) totally disagree, (2) disagree, (3) neither agree nor disagree, (4) agree, (5) totally agree

Additions ID:

Determinant 29	**Relationship with other departments or organizations:** from professionals from other wards within the same organization or outside. (Determinant 12 in: Fleuren et al., 2004; Fleuren et al., 2014.)
Description *Operationalisation*	There is a good relationship with other departments or organizations involved in the intervention. Response scale: (1) totally disagree, (2) disagree, (3) neither agree nor disagree, (4) agree, (5) totally agree; namely ……

Determinant 30	**Logistical procedures related to the innovation, e.g., logistical problems in scheduling patients: well arranged or badly arranged** (Determinant 17 in: Fleuren et al., 2004; Fleuren et al., 2014.)
Description	Logistical procedures are well arranged.
Operationalisation	Response scale: (2) no (1) yes
Determinant 31	**Number of potential users to be reached: many, few** (Determinant 18 in: Fleuren et al., 2004; Fleuren et al., 2014.)
Description	How many professionals are involved in the intervention? ……
Adjustment ID	*1) is communication about the intervention organized?;* *2) if yes: how is it organized?;* *3) is communication sufficient?*

This table showed the suggested adjustments to existing questions and additions in order to improve usability of the MIDI for deployment in health care organizations that support persons with ID ('adjustments ID' or 'additions ID').

DISCUSSION

In this study, we have collected and analyzed feedback on the MIDI instrument and are proposing various adaptations to it, including the level of ID, outcome measures, multidisciplinary work, and multi levelness of interventions. With these adaptations, the MIDI is a potential instrument for deployment in health care organizations that support persons with ID.

Not all of the determinants of the MIDI were represented in the data of all four semi-structured interviews. Apparently, interviewees were not asked about the determinant 'Legislation and regulations', and the participants mentioned nothing about this topic. It would be interesting to inquire about this determinant in future research. Apart from this determinant that was never mentioned in the interviews, the majority of the determinants of the MIDI, 21 out of the 29 determinants, were discussed in three or four interviews. This could reflect the importance of these determinants for implementation of lifestyle interventions in these health care organizations. Also, the frequency of the occurrence of a determinant within one interview could be a reflection of the importance of this specific determinant. For example, in one interview, 'Procedural clarity' of the lifestyle intervention was scored twice and 'Correctness of the intervention' twenty times. This could be a subject of further research in a next study in which the MIDI-Intellectual Disability (MIDI-ID) will

be tested further for its usability in health care organizations that support persons with ID. Probably, specific determinants may be of more influence than others, for example, a step-by-step description may be of less importance for implementation than the expertise and skills of a DSP performing the intervention. The interviewees have indicated several times that with those components of an intervention which required physical activity, as well as with the nutrition course in intervention 3 and the test moments in interventions 3 and 4, it is imperative the instructor or educator is an expert in dealing with persons with ID. For example, they emphatically stated how important it is that the instructor is both sensitive to necessary on-the-spot adaptations to the programme and knowledgeable about which exercises are suitable for persons with ID and how these should be performed. This was mentioned much more often than the need to have the exercises described step-by-step. Therefore, knowledge and expertise seem to be valued higher as factors for success than instructions in a manual or lesson plan. The MIDI only indicates the presence of determinants whereas, for persons with ID, it would be helpful if it also indicated the importance of determinants. As such, additional information about the most crucial determinants could help us determine which determinants could help us prioritizing the allocation of time and finances on instructors or perfecting lesson plans. Attribution of a weighting factor per determinant could be a solution to investigate this further. In a feasibility study questions could be added about the level of importance of each MIDI determinant. In addition, it would be interesting to investigate if a focus group with a variety of professionals involved in the same intervention will give the same distribution of importance of a determinant.

The influence of the level of ID on the implementation of an intervention was brought forward during the interviews. Characteristics of the target group are described as a variable that may have an effect on the implementation of an intervention (Grol et al., 2005; Green & Kreuter, 1991). This underpins the suggested addition of multiple questions about this topic.

During the interviews, the importance of the evaluation of effects for specific goals and appropriate measuring instruments was mentioned. This, in fact, is considered an important requisite for implementation (Glasgow et al., 1999). Nevertheless, the MIDI currently does not ask if the evaluation of effects for specific outcome measures is part of the intervention. In this study, we explored lifestyle interventions that consisted of multiple intervention components and also included different outcome measures. For example, when managing a weight control programme a component of the intervention programme may be doing measurements, i.e. measuring the movement pattern, the diet, BMI, and waist circumference (Intervention 3, Table 2, Textbox 2). Therefore, a question associated with the intervention was proposed as part of the determinant 'Observability of the intervention'. In addition, we would advise completing the MIDI several times, each for different intervention components, only using the relevant data.

During the interviews, multidisciplinary work was a recurring topic. Interviewees mention problems such as barriers with respect to the relationship with other departments or organizations as well as the number of professionals involved in the interventions and the communication between them. These points are also mentioned by Grol et al. (2005). Because many professionals are involved in the support of persons with ID (Kuijken & van Anrooy et al., 2018) and also in performing a lifestyle intervention (Steenbergen et al., 2017), it seems valuable to add two new determinants about these topics. With respect to the usability of the MIDI in general, the author of the MIDI stated that all of the professionals involved with the intervention should preferably complete it. In practice, this may lead to a substantial number of participants, which may affect the feasibility. The number of respondents needed for an accurate analysis of an intervention is still to be established as part of validation studies.

During the interviews, support for persons with ID as well as for their DSPs was considered important. Support can be provided by other professionals in or outside a team or organization or by the social environment of the person with ID. DSPs in particular have a role in motivating persons with ID to change their physical activity behaviour or maintain healthy physical activity, for example, in creating options in daily life, at home, during work or daycare, and also supporting participation in and access to physical or sports activities (Naaldenberg et al., 2013; Caton et al., 2012; Temple et al., 2006). Therefore, the question about social support by DSPs should always be asked (determinant 13). It could even be valuable to have the MIDI always completed by all the DSPs involved with the clients who participate in the intervention even when those DSPs are not directly involved in it. Related to this point, the author of the MIDI stated that the determinant 'Self-efficacy' should be asked for all activities of the intervention and, in addition, to all professionals involved with it, i.e., within the entire team supporting a person with ID and to each professional involved. In practice, this could be a substantial number of professionals. Therefore, self-efficacy also could be evaluated during a group meeting of an intervention team. (For example, in interventions 3 and 4, such group meetings are intervention components, Table 2).

It is usually much easier to perform an intervention if you are genuinely convinced of the importance (Grol et al., 2005, Prochaska and Velicer, 1997). The involvement of DSPs and other professionals in the development of the intervention was also discussed with the author of the MIDI as it is generally much easier to perform an intervention if you are involved in developing the policy and the intervention and consider yourself as the owner (Grol et al., 2005). Because this aspect is a 'conditio sine qua non' for developing an innovation, it is not considered to be a determinant.

Strengths and limitations

As shown, the four interventions about which the semi-structured interviews were performed differed in extensiveness. There were differences in the number of parts, intention, planning, etc. Due to these differences between the four interventions we have received a more complete view of the usefulness of the MIDI. Also, more interventions could be included. However, because the majority of the determinants of the MIDI were represented, we do not consider this as a significant limitation.

This is the first study investigating whether determinants of the MIDI are represented when evaluating implementation of interventions targeting persons with ID. A strength is that, by doing so, the importance of specific determinants and complexity of implementation in a multidisciplinary setting become clear. We could not explore these issues in the present study because these questions did not emerge until determining the results. In addition, this research provides new insights for directions for further research. This study is a first exploration of the usability of the MIDI for implementation of interventions for persons with ID. This study provides preliminary evidence for the suggested adaptations, and the adjustments that we made will need to be tested with other interventions and in a larger group of involved persons in these interventions.

Recommendations and implications

With this first version of the MIDI-ID, interventions implemented in health care organizations that support persons with ID can be evaluated for important determinants in order to further improve this instrument and the subsequent implementation of lifestyle interventions.

For testing the MIDI-ID for its usability in health care organizations, the frequency of the occurrence of a determinant within one interview could be taken into account as a reflection of the importance of this specific determinant. In addition, attribution of a weighting factor may give additional in-depth information about the conditions for implementation.

Finally, with respect to the recurring topic of multi levelness of interventions and multidisciplinary work, it could be valuable to analyze results of a focus group with professionals who are involved in the same intervention in order to investigate whether these results are similar to the answers of one professional on the MIDI. The interviews showed that several persons are directly or indirectly involved in the same intervention and all of them could possibly influence the implementation. The complexity of this was illustrated by the interviewee of intervention 3. Here, a physical therapist; a DSP; a professional trainer; a dietician; other DSPs; a behavioural therapist; a department physician; and the social environment of the person with ID were involved.

Concerning multidisciplinary work and the considerable role of DSPs in a health care organization, it is interesting to be aware of the answers of all of the DSPs involved with the clients

who participate in the intervention even when those DSPs are not the immediate instructors. As already mentioned, especially the DSP and its team of colleague DSPs are intimately aware of the client's motivation and effects of the interventions on a particular client. Therefore, the observations of all are useful to the evaluation of intervention's implementation. The supplemented MIDI should be tested and cross-validated in order to further improve the suitability of this measurement instrument.

Conclusion

All theoretically based determinants of the MIDI, except for one, were represented in data of semi-structured interviews about four lifestyle interventions that were developed and used in four health care organizations supporting persons with ID. In addition, data was ascertained in the semi-structured interviews that could not be purely related to determinants currently included in the MIDI. With these findings, this study provides preliminary evidence that adaptations to the MIDI are required in order for it to be beneficial for objectively evaluating the implementation of lifestyle interventions in health care organizations that provide care to persons with ID. With the adaptations, the first version of the MIDI-ID can be tested and cross-validated to further improve this instrument and, subsequently, the implementation of lifestyle interventions.

Conflict of interest

The authors declare they have no competing interests.

Acknowledgements

This work was supported by the 'Innovatiewerkplaats Active Ageing voor mensen met een verstandelijke beperking', a consortium in which nine health care organizations for people with ID out of the northern part of the Netherlands collaborated with the Research group Healthy Ageing, Allied Health Care and Nursing, Hanze University, Applied Sciences, Groningen. The authors kindly acknowledge and thank the employees of the health care organizations for participating in this study the students who conducted the semi-structured interviews.

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Appendix 1. Topic list with examples of questions (Semi-structured interviews)

Topics
Characteristics of organization and participant
Name organization and location
Function of the participant
What is your function within the organization?
How many years?
Function in relation to the intervention?
Policy healthy lifestyle? What is the policy with regard to lifestyle?
Characteristics of the intervention
Name?
Type? (information, education?)
Description of the intervention
Frequency (structural, periodical, once a year?
Content of the intervention
Resources of the intervention:
Personnel
Environment
Materials
Volunteers
Transport
Who perform the intervention, is responsible?
What is his/her function within the intervention?
Who else is involved?
If yes, in what way?
If no, why are others not involved?
Aim of the intervention:
Target: when is intervention successful or not?
Effect evaluation?
If yes: which effects?
If no: why not?
How do you prevent regression of effects?
Target population:
Conditions to participate
Age range
Level of ID
Additional disabilities
How many participants
How do you include or reach intended participants
What do you do to improve adherence of participants
Do participants have influence on the content of the intervention

Results of the intervention
Facilitators or barriers
Resources: time, personnel, location, environment, materials, volunteers, transport
Knowledge of professionals involved
Financial resources
Motivation participant
Motivation professionals
Feasibility for participant
Connection to target group
Commitment third parties
When do you speak of success or failure?
Development and evaluation
Development
How is the intervention developed? Research, evidence based, own intuition, or experience?
By whom is the intervention developed?
Why was the intervention developed?
How it is compatible with other activities or interventions? Was this part of the development?
Evaluation
How is the intervention evaluated for example in a team meeting?
What does the organization do with the results of the evaluation?

Appendix 2. MIDI (Fleuren et al., 2014)

The original list of Fleuren et al. (2014) is supplemented with the proposed adjustments to existing questions and additions in order to improve usability of the MIDI for deployment in health care organizations that support persons with ID ('adjustments ID' or 'additions ID').

Determinants associated with the innovation

Determinant 1	**Procedural clarity**
Description	Extent to which the innovation is described in clear steps / procedures.
Operationalisation	The innovation clearly describes the activities I should perform and in which order. Response scale: (1) totally disagree, (2) disagree, (3) neither agree nor disagree, (4) agree, (5) totally agree
Adjustment ID	The intervention is intended for persons with specific levels of ID. Response scale: (1) mild ID, (2) moderate ID, (3) severe ID, (4) profound ID, or a combination of these levels: …….

Determinant 2	**Correctness**
Description	Degree to which the innovation is based on factually correct knowledge.
Operationalisation	The innovation is based on factually correct knowledge. Response scale: (1) totally disagree, (2) disagree, (3) neither agree nor disagree, (4) agree, (5) totally agree

Determinant 3	**Completeness**
Description	Degree to which the activities described in the innovation are complete.
Operationalisation	The innovation provides all of the information and materials needed to work with it properly. Response scale: (1) totally disagree, (2) disagree, (3) neither agree nor disagree, (4) agree, (5) totally agree

Determinant 4	**Complexity**
Description	Degree to which implementation of the innovation is complex.
Operationalisation	The innovation is too complex for me to use. Response scale: (5) totally disagree, (4) disagree, (3) neither agree nor disagree, (2) agree, (1) totally agree

Determinant 5	**Compatibility**
Description	Degree to which the innovation is compatible with the values and working method in place.

Operationalisation	The innovation is a good match for how I am used to working. Response scale: (1) totally disagree, (2) disagree, (3) neither agree nor disagree, (4) agree, (5) totally agree

Determinant 6	**Observability**
Description	Visibility of the outcomes for the user, for example, whether the outcomes of a particular treatment are clear to the user.
Operationalisation	The outcomes of using the innovation are clearly observable. Response scale: (1) totally disagree, (2) disagree, (3) neither agree nor disagree, (4) agree, (5) totally agree
Adjustment ID	The intervention evaluates effects for specific outcome measures. Response scale: (1) yes, (2) partly, (3) no.

Determinant 7	**Relevance for client**
Description	Degree to which the user believes the innovation is relevant for his/her client.
Operationalisation	I think the innovation is relevant for my clients. Response scale: (1) totally disagree, (2) disagree, (3) neither agree nor disagree, (4) agree, (5) totally agree
Adjustment ID	I think the innovation is relevant for the specific levels of ID of my clients: Response scale: (1) totally disagree, (2) disagree, (3) neither agree nor disagree, (4) agree, (5) totally agree

Determinants associated with the user

Determinant 8	**Personal benefits/drawbacks**
Description	Degree to which using the innovation has advantages or disadvantages for the users themselves.
Operationalisation	To what extent does using the innovation have personal benefits/drawbacks for you? This question is asked for each concrete benefit or drawback that is expected to be salient for the particular user population. Response scale advantages: (1) totally disagree, (2) disagree, (3) neither agree nor disagree, (4) agree, (5) totally agree

	Response scale disadvantages: (5) totally disagree, (4) disagree, (3) neither agree nor disagree, (2) agree, (1) totally agree
Determinant 9	**Outcome expectations**
Description	Perceived probability and importance of achieving the client objectives as intended by the innovation
Operationalisation	Composite measure: the product of importance and probability These questions about the importance and probability are asked for each objective separately. *Importance* I think it is important to achieve the following objectives for my client …[state objectives]. Response scale: (1) totally disagree, (2) disagree, (3) neither agree nor disagree, (4) agree, (5) totally agree *Probability* I expect that using the innovation will actually achieve the following objectives for my client …[state objectives]. Response scale: (1) most definitely not (2) definitely not (3) perhaps not, perhaps (4) definitely (5) most definitely
Determinant 10	**Professional obligation**
Description	Degree to which the innovation fits in with the tasks for which the user feels responsible when doing his/her work.
Operationalisation	I feel it is my responsibility as a professional to use this innovation. This question is asked for each activity in the innovation Response scale: (1) totally disagree, (2) disagree, (3) neither agree nor disagree, (4) agree, (5) totally agree
Determinant 11	**Client satisfaction**
Description	Degree to which the user expects clients to be satisfied with the innovation.
Operationalisation	Clients will generally be satisfied if I use this innovation. Response scale: (1) totally disagree, (2) disagree, (3) neither agree nor disagree, (4) agree, (5) totally agree

Determinant 12	**Client cooperation**
Description	Degree to which the user expects clients to cooperate with the innovation.
Operationalisation	Clients will generally cooperate if I use this innovation. Response scale: (1) totally disagree, (2) disagree, (3) neither agree nor disagree, (4) agree, (5) totally agree

Determinant 13	**Social support**
Description	Support experienced or expected by the user from important social referents relating to the use of the innovation (for example from colleagues, other professionals they work with, heads of department or management).
Operationalisation	I can count on adequate assistance from my colleagues if I need it to use the innovation. *This question is asked for important social referent group or person inside or outside the organization (colleagues, immediate hierarchical superior, management, professionals involved in the delivery of care, etc.).*
Addition ID	*Ask always for support of Direct Support Persons and support of family members* Response scale: (1) totally disagree, (2) disagree, (3) neither agree nor disagree, (4) agree, (5) totally agree

Determinant 14	**Descriptive norm**
Description	Colleagues' observed behaviour; degree to which colleagues use the innovation.
Operationalisation	In your opinion, what proportion of the colleagues in your organization for whom the innovation is intended actually use the innovation? Response scale: (1) not a single colleague (2) almost no colleagues (3) a minority (4) half (5) a majority (6) almost all colleagues (7) all colleagues.
Adjustment ID	Are professionals from different disciplines working with the intervention as intended? Response scale: (1) none of the disciplines (2) almost none of the disciplines (3) a minority of the disciplines involved (4) half (5) a majority (6) almost all disciplines (7) all disciplines.
Adjustment ID	Are family members performing the intervention as intended? Response scale: (1) totally disagree, (2) disagree, (3) neither agree nor disagree, (4) agree, (5) totally agree

Determinant 15	**Subjective norm**
Description	The influence of important others on the use of the innovation.
Operationalisation	Composite measure: the product of normative beliefs* and motivation to comply**
	**Perceived expectation of important others about the use of the innovation.* ***Degree to which somebody tends to pay attention to the expectations of those important others.*
	These questions about normative beliefs and motivation to comply are asked for each referent person/group inside or outside the organization (colleagues, heads of department, management, clients etc.).
	Normative beliefs To what extent do the following people [list people] expect you to use the innovation?
	Response scale: (1) most definitely not (2) definitely not (3) perhaps not, perhaps (4) definitely (5) most definitely
	Motivation to comply When it comes to working in accordance with the innovation, to what extent do you comply with the opinions of the following people [list people]?
	Response scale: (1) very little (2) little (3) not a little, not a lot (4) a lot (5) a great deal

Determinant 16	**Self-efficacy**
Description	Degree to which the user believes he or she is able to implement the activities involved in the innovation.
Operationalisation	Should you wish to do so, do you think you can put [state activity from the innovation] into practice?
	This question is asked for each activity and to each professional involved (addition ID) in the innovation.
	Response scale: (1) most definitely not (2) definitely not (3) perhaps not, perhaps (4) definitely (5) most definitely

Determinant 17	**Knowledge**
Description	Degree to which the user has the knowledge needed to use the innovation.

Operationalisation	*Objective measurement* with a knowledge test including a range of questions. *Subjective measurement* with one question: I know enough to use the innovation. Response scale: (1) totally disagree, (2) disagree, (3) neither agree nor disagree, (4) agree, (5) totally agree
Note	The best approach is to assess knowledge objectively using a test. If this is not possible, a subjective assessment can be made with one question.

Determinant 18	**Awareness of content of innovation**
Description	Degree to which the user has learned about the content of the innovation.
Operationalisation	To what extent are you informed about the content of the innovation? Response scale: (1) I'm not familiar with the innovation (2) I'm familiar with the innovation, but I haven't read it through (yet) (3) I'm familiar with the innovation and I've glanced through it (4) I'm familiar with the innovation and I have read through it thoroughly

Determinants associated with the organization

Determinant 19	**Formal ratification by management**
Description	Formal ratification of the innovation by management, for example, by including the use of the innovation in policy documents.
Operationalisation	Has management set up formal arrangements in your organization relating to the use of this innovation (in policy plans, work plans, and so on)? Response scale: (1) no (2) yes

Determinant 20	**Replacement when staff leave**
Description	Replacement of staff leaving the organization
Operationalisation	In my organization, there are arrangements in place so that staff who use the innovation and leave the organization are replaced in good time by employees who are/will be adequately prepared to take over. Response scale: (1) totally disagree, (2) disagree, (3) neither agree nor disagree, (4) agree, (5) totally agree

Determinant 21	**Staff capacity**
Description	Adequate staffing in the department or in the organization where the innovation is being used.
Operationalisation	There are enough people in our organization to use the innovation as intended. Response scale: (1) totally disagree, (2) disagree, (3) neither agree nor disagree, (4) agree, (5) totally agree

Determinant 22	**Financial resources**
Description	Availability of financial resources needed to use the innovation.
Operationalisation	There are enough financial resources available to use the innovation as intended. Response scale: (1) totally disagree, (2) disagree, (3) neither agree nor disagree, (4) agree, (5) totally agree

Determinant 23	**Time available**
Description	Amount of time available to use the innovation.
Operationalisation	Our organization provides me with enough time to include the innovation as intended in my day-to-day work. Response scale: (1) totally disagree, (2) disagree, (3) neither agree nor disagree, (4) agree, (5) totally agree

Determinant 24	**Material resources and facilities**
Description	Presence of materials and other resources or facilities necessary for the use of the innovation as intended (such as equipment, materials or space).
Operationalisation	Our organization provides me with enough materials and other resources or facilities necessary for the use of the innovation as intended. Response scale: (1) totally disagree, (2) disagree, (3) neither agree nor disagree, (4) agree, (5) totally agree
Adjustment ID	The materials and resources are suitable for the intended levels of ID Response scale: (1) totally disagree, (2) disagree, (3) neither agree nor disagree, (4) agree, (5) totally agree

Determinant 25	**Coordinator**
Description	The presence of one or more persons responsible for coordinating the implementation of

	the innovation in the organization.
Operationalisation	In my organization, one or more people have been designated to coordinate the process of implementing the innovation Response scale: (1) no (2) yes
Determinant 26	**Unsettled organisation**
Description	Degree to which there are other changes in progress (organizational or otherwise) that represent obstacles to the process of implementing the innovation such as reorganizations, mergers, cuts, staffing changes or the simultaneous implementation of different innovations.
Operationalisation	Are there, in addition to the implementation of [describe innovation], any other changes in the organization affecting the implementation of the innovation now or in the foreseeable future (reorganization, merger, cuts, staffing changes, other innovations)? Response scale: (2) no (1) yes
Determinant 27	**Information accessible about use of innovation**
Description	Accessibility of information about the use of the innovation.
Operationalisation	It is easy for me to find information in my organization about using the innovation as intended. Response scale: (1) totally disagree, (2) disagree, (3) neither agree nor disagree, (4) agree, (5) totally agree
Determinant 28	**Performance feedback**
Description	Feedback to the user about progress with the innovation process.
Operationalisation	In my organization, feedback is regularly provided about progress with the implementation of the innovation. Response scale: (1) totally disagree, (2) disagree, (3) neither agree nor disagree, (4) agree, (5) totally agree
Additions ID:	
Determinant 29	**Relationship with other departments or organizations: from professionals from other wards within the same organization or outside** (Determinant 12 in: Fleuren et al., 2004; Fleuren et al., 2014.)

Description *Operationalisation*	There is a good relationship with other departments or organizations. Response scale: (1) totally disagree, (2) disagree, (3) neither agree nor disagree, (4) agree, (5) totally agree; namely ……
Determinant 30	**Logistical procedures related to the innovation, e.g., logistical problems in scheduling patients: well arranged or badly arranged** (Determinant 17 in: Fleuren et al., 2004; Fleuren et al., 2014.)
Description *Operationalisation*	Logistical procedures are well arranged. Response scale: (2) no (1) yes
Determinant 31	**Number of potential users to be reached: many, few** (Determinant 18 in: Fleuren et al., 2004; Fleuren et al., 2014.)
Description	How many professionals are involved in the intervention? ……
Adjustment ID	*1) is communication about the intervention organized?;* *2) if yes: how is it organized?;* *3) is communication sufficient?*

<u>Determinants associated with the socio-political context</u>

Determinant 32	**Legislation and regulations**
Description	Degree to which the innovation fits in with existing legislation and regulations established by the competent authorities (examples being financial structures, or substantive legislation and supervision from the Dutch Health Care Inspectorate or the Dutch Care Authority).
Operationalisation	The activities listed in the innovation fit in well with existing legislation and regulations. Response scale: (1) totally disagree, (2) disagree, (3) neither agree nor disagree, (4) agree, (5) totally agree